

Drinking Water Source Assessment

Water System

System name

_____ County

Water Source

Source name

Assessment Date

Month, year

California Department of Health Services
Drinking Water Field Operations Branch
DHS _____ District

District No.	_____
System No.	_____
Source No.	_____
PS Code	_____

Assessment Summary

District Name _____ District No. _____ County _____
System Name _____ System No. _____
Source Name _____ Source No. _____ PS Code: _____

Completed by _____ Date _____

Description of System and Source

The WATER SYSTEM NAME water system is located in COUNTY NAME County and serves the [COMMUNITY | CITY | BUSINESS NAME]. There are approximately [XXX] service connections serving a population of [XXXXXX].

The drinking water source for the WATER SYSTEM NAME water system is [NAME OF LAKE, RIVER, AQUIFER | WELLS] located in [GENERAL DESCRIPTION OF REGION]. The [WATERSHED | RECHARGE AREA] for the source includes approximately [XXXXXX] [acres | square miles]. General land use is [agricultural | urban | residential | undeveloped | forested] etc.

Assessment Procedures

The assessment of the source SOURCE NAME was conducted by [DHS District office, County office, Water System, etc]. The following sources of information were used in the assessment: [water system files, DHS files, County records, previous study, etc].

Procedures used to conduct the assessment include: file review, calculations, field review, meet with water system, run models, meet with other agencies, use GIS, etc.

Contents of this Assessment

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Assesment Summary
Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Vulnerability Summary
Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Source Location Form
Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Delineation of Protection Zones
Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Physical Barrier Effectiveness Checklist
Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Source Data Sheet
Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Inventory of Possible Contaminating Activities
Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Vulnerability Ranking
Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	Assessment Map

Comments

Add other comments concerning this assessment.

Drinking Water Source Assessment and Protection (DWSAP) Program

Vulnerability Summary

District Name _____ District No. _____ County _____
System Name _____ System No. _____
Source Name _____ Source No. _____ PS Code: _____

Completed by _____ Date _____

THE FOLLOWING INFORMATION MUST BE INCLUDED IN THE SYSTEM CONSUMER CONFIDENCE REPORT

A source water assessment was conducted for the _____ *source name* _____ of the
_____ *system name* _____ water system in _____ *month, year* _____.

The source is considered most vulnerable to the following activities associated with contaminants detected in the water supply:

PCA1
PCA2
PCA3
Etc.

The source is considered most vulnerable to the following activities not associated with any detected contaminants:

PCA1
PCA2
PCA3
Etc.

Discussion of Vulnerability

In this section, provide more information on the source's vulnerability to contamination.

- *If there are no detected contaminants, use this language or similar:*

"There have been no contaminants detected in the water supply, however the source is still considered vulnerable to activities located near the drinking water source."

In addition, you may include a description of actions that the water system is taking to protect the water supply.

- *If there are detected contaminants, use this language or similar:*

"Describe the detected contaminants and the PCAs with which they are associated. If the detected contaminants cannot be associated with a detected contaminant, explain this. In addition, provide additional information such as:

- *Elaboration on PCAs ...*
- *Description of mitigating information ...*
- *Actions that the water system is taking ..."*

Delineation of Surface Water Protection Zones

Public water system: _____ ID No.: _____

Name of source: _____ ID No.: _____

Delineation date: _____ Delineation conducted by _____

The delineation of protection zones for a surface water source is optional. The source area for a surface water source is the watershed.

If protection zones are established, the recommended distances are as follows:

*Zone A: 400 feet from reservoir banks or primary stream boundaries
 200 feet from tributaries
Zone B: 2,500 feet from intakes*

Protection zones established for this source are:

Zone A: _____ feet from reservoir banks or primary stream boundaries
 _____ feet from tributaries
Zone B: _____ feet from intakes

Other Delineation methods: (describe)

Surface Water Physical Barrier Effectiveness (PBE)

District Name _____ District No. _____ County _____

System Name _____ System No. _____

Source Name _____ Source No. _____ PS Code: _____

Completed by _____ Date _____

Drinking Water Source/ Watershed Information

Note: Most of the following information should be available from the Watershed Sanitary Survey of the water source.

1. Is the source an impounded reservoir or a direct stream intake?
 - a. Reservoir
 - b. Stream intake
 - c. Other, describe: _____

2. Source Characteristics
 - a. Area of tributary watershed: _____ acres or square miles
 - b. Area of water body within watershed: _____ acres or square miles
 - c. Volume of water body: _____ acre-feet
 - d. Maximum rate of withdrawal through intake: _____ gallons per day
 - e. Are the primary tributaries seasonal, perennial or both? _____

3. What is the approximate travel time to the intake for water at farthest reaches of the water body?
 - a. Source is direct intake, no impounded water body
 - b. Less than 30 days
 - c. More than 30 days and less than 1 year
 - d. More than 1 year

4. What is the general topography of the watershed?
 - a. Flat terrain (<10% slopes)
 - b. Hilly (10 to 30% slopes)
 - c. Mountainous (> 30% slopes)
 - d. Not sure

5. What is the general geology of the watershed?
 - a. Materials prone to landslides
 - b. Materials not prone to landslides
 - c. Not sure

6. What general soil types are on the watershed?
 - a. Rock
 - b. Loams, sands
 - c. Clay
 - d. Not sure

Surface Water Physical Barrier Effectiveness (PBE)

System Name _____ System No. _____

Source Name _____ Source No. _____ PS Code: _____

7. What type of vegetation covers most of the watershed?
- Grasses
 - Low growing plants and shrubs
 - Trees
 - Not sure
8. What is the mean seasonal precipitation on the watershed?
- More than 40 inches/year
 - 10 to 40 inches/year
 - Less than 10 inches/year
 - Not sure
9. Is there significant ground water recharge to the water body?
- Yes
 - No
 - Not sure

Physical Barrier Effectiveness Determination

Parameters indicating **Low Physical Barrier Effectiveness (LE)**

(A source with any of the parameters listed below would be considered to have less effective physical barrier properties)

- 3a
- 4c or 4d
- 5a or 5c
- 7c or 7d
- 8a or 8d
- 9a

Parameters indicating **High Physical Barrier Effectiveness (HE)**

(A source would need to have all of the parameters listed below to be considered to have highly effective physical barrier properties)

- 3d and
- 4a and
- 5b and
- 7a and
- 8c and
- 9b

All other sources are considered to have **Moderate Physical Barrier Effectiveness**

Determination for this source:

Low (LE)

Moderate (ME)

High (HE)

SURFACE WATER DATA SHEET

Complete as much information as possible. Leave blank if information is not available, use N.A. if not applicable.

* Indicates items required for Source Water Assessment

	<i>(separate multiple entries in field with semi-colon)</i>	Actual, Estimated or Default?
GENERAL INFORMATION		
System Name		<i>from DHS database</i>
System Number		<i>from DHS database</i>
Source of Information <i>(well log, DHS/County files, system, etc)</i>		
Organization Collecting Information <i>(DHS, County, System, other)</i>		
Date Information Collected/Updated		
SOURCE IDENTIFICATION		
* Source Name		<i>from DHS database</i>
* DHS Source Identification Number (FRDS ID No.)		<i>from DHS database</i>
Source Status (Active, Standby, Inactive)		<i>from DHS database</i>
SOURCE LOCATION		
Inlet Ground Surface Elevation (ft above Mean Sea Level)		
Street or Road		
Nearest Cross Street		
City		
County		
Site plan on file? ("YES" or "NO")		
TYPE OF SOURCE		
Type of Source: (Lake, Reservoir, River, Stream, Creek, Other)		
Production (gallons per year)		
Frequency of Use (hours/year)		
LAKE/RESERVOIR DATA (If Applicable)		
Name of Lake or Impounding Reservoir		
Date Dam Constructed		
Dam Length (feet)		
Dam Height (feet)		
Dam Width - Base (feet)		
Dam Width - Top (feet)		
Surface Area when full (acres)		
Capacity (acre-feet)		
Reservoir Yield (gallons per day)		
Yield Reliability (% of time the above yield can be supplied)		
Outlet Location		
Outlet Level(s) (distance below maximum water surface) (feet)		
Multiple Outlet Depths Available? "YES" or "NO"		
Outlet Distance to Inflow (feet)		
Algae Control Measures		
Type of Recreational Activities in Reservoir <i>(list all that apply: boating, swimming, fishing, water skiing, etc.)</i>		
Distance to Nearest Sewage Facilities to Outlet (feet)		
STREAM INTAKE DATA (If Applicable)		
Name of River, Stream or Creek		
Intake Location		

SURFACE WATER DATA SHEET (continued)		
STREAM INTAKE DATA (If Applicable) (continued)		
Stream Flow - Maximum (ft3/sec)		
Stream Flow - Minimum (ft3/sec)		
Stream Flow - Average (ft3/sec)		
Date Diversion Structure Constructed		
Diversion Structure Type (direct, infiltration gallery, etc.)		
Distance to Nearest Sewage Facilities to Diversion Structure (feet)		
WATERSHED DATA		
Area of Watershed (acres)		
Area Owned or Controlled by Water System (acres)		
Primary Tributaries		
Topography <i>(list all that apply: flat terrain, hilly, mountainous, etc.)</i>		
Percent slopes (range)		
Geology		
Watershed prone to landslides? "YES" or "NO"		
Predominant Soil Types <i>(list all that apply: sand, loam, silt, clay, gravel, rock, fractured rock)</i>		
Predominant Vegetation <i>(list all that apply: grass, shrubs, chaparral, trees, forested, etc.)</i>		
Watershed prone to erosion? "YES" or "NO"		
Mean Seasonal Precipitation (inches/year)		
Significant Ground water Recharge? "YES" or "NO"		
* Neighborhood/Surrounding Area <i>(see Note 1)</i>		
Wastewater measures (septic systems, sewer treatment, etc.)		
Watershed control measures		
INTAKE PIPE		
Material		
Diameter		
Length		
Depth		
Pumped or Gravity flow		
Discharges to: <i>(i.e., distribution system, storage, etc.)</i>		
INTAKE PUMP INFORMATION		
Number		
Make		
Type		
Size (hp)		
* Capacity (gpm)		
Lubrication Type		
Type of Power: <i>(i.e., electric, diesel, etc.)</i>		
Auxiliary power available? ("YES" or "NO")		
Operation controlled by: <i>(i.e., level in tank, pressure, etc.)</i>		
REMARKS AND DEFECTS (use additional sheets as necessary)		

NOTES

1. Neighborhood/Surrounding Area (list all that apply): A= Agricultural, Ru = Rural, Re = Residential, Co = Commercial, I = Industrial, Mu = Municipal, P = Pristine, O = Other

Possible Contaminating Activities (PCA) Inventory Form

Surface Water Source

Public water system: _____ ID No.: _____

Name of source: _____ ID No.: _____

Inventory date: _____ Inventory conducted by _____

Name of Surface Water Body : _____

Indicate PCAs pertinent to the drinking water source, its source area (watershed) and protection zones (if established), from the following tables, as applicable:

Are zones established? YES or NO

PCA Checklist Table D-1, page 1 of 2						
COMMERCIAL/INDUSTRIAL						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
Automobile-related activities						
Body shops (H)						
Car washes (M)						
Gas stations (VH)						
Repair shops (H)						
Boat services/repair/refinishing (H)						
Chemical/petroleum processing/storage (VH)						
Chemical/petroleum pipelines (H)						
Dry cleaners (VH)						
Electrical/electronic manufacturing (H)						
Fleet/truck/bus terminals (H)						
Furniture repair/manufacturing (H)						
Home manufacturing (H)						
Junk/scrap/salvage yards (H)						
Machine shops (H)						
Metal plating/finishing/fabricating (VH)						
Photo processing/printing (H)						
Plastics/synthetics producers (VH)						
Research laboratories (H)						

PCA Checklist						
Table D-1, page 2 of 2						
COMMERCIAL/INDUSTRIAL						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
Wood preserving/treating (H)						
Wood/pulp/paper processing and mills (H)						
Lumber processing and manufacturing (H)						
Sewer collection systems (H, if in Zones, otherwise L)						
Parking lots/malls (>50 spaces) (M)						
Cement/concrete plants (M)						
Food processing (M)						
Funeral services/graveyards (M)						
Hardware/lumber/parts stores (M)						
Appliance/Electronic Repair (L)						
Office buildings/complexes (L)						
Rental Yards (L)						
RV/mini storage (L)						
Other (list)						

PCA Checklist						
Table D-2, page 1 of 2						
RESIDENTIAL/MUNICIPAL						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
Airports - Maintenance/ fueling areas (VH)						
Landfills/dumps (VH)						
Railroad yards/ maintenance/ fueling areas (H)						
Septic systems - high density (>1/acre) (VH if in Zones, otherwise M)						
Sewer collection systems (H, if in Zones, otherwise L)						
Utility stations - maintenance areas (H)						
Wastewater treatment and disposal facilities (VH in Zones, otherwise H)						
Drinking water treatment plants (M)						
Golf courses (M)						
Housing - high density (>1 house/0.5 acres) (M)						
Motor pools (M)						
Parks (M)						
Waste transfer/recycling stations (M)						

<p align="center">PCA Checklist Table D-2, page 2 of 2 RESIDENTIAL/MUNICIPAL</p>						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
Apartments and condominiums (L)						
Campgrounds/ Recreational areas (L)						
Fire stations (L)						
RV Parks (L)						
Schools (L)						
Hotels, Motels (L)						
Other (list)						

PCA Checklist						
Table D-3, page 1 of 3						
AGRICULTURAL/RURAL						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
Grazing (> 5 large animals or equivalent per acre) (H in Zones, otherwise M)						
Concentrated Animal Feeding Operations (CAFOs) as defined in federal regulation ¹ (VH in Zones, otherwise H)						
Animal Feeding Operations as defined in federal regulation ² (VH in Zones, otherwise H)						
Other Animal operations (H in Zones, otherwise M)						
Concentrated Aquatic Animal Production Facilities, as defined in federal regulation (VH in Zones, otherwise H)						
Other Aquatic Animal production operations (H in Zones, otherwise M)						
Managed Forests (VH in Zones, otherwise H) (unless additional detail provided*)						
Farm chemical distributor/ application service (H)						
Farm machinery repair (H)						

PCA Checklist						
Table D-3, page 2 of 3						
AGRICULTURAL/RURAL						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
Septic systems – Low density (<1/acre) (H in Zones, otherwise L)						
Lagoons / liquid wastes (H)						
Machine shops (H)						
Pesticide/fertilizer/ petroleum storage & transfer areas (H)						
Agricultural Drainage (H in Zones, otherwise M)						
Wells - Agricultural/ Irrigation (H)						
Crops, irrigated (Berries, hops, mint, orchards, sod, greenhouses, vineyards, nurseries, vegetable) (M)						
Sewage sludge/biosolids application (M)						
Fertilizer, Pesticide/ Herbicide Application (M)						
Crops, nonirrigated (e.g., Christmas trees, grains, grass seeds, hay, pasture) (L) (includes drip-irrigated crops)						
Other (list)						

PCA Checklist Table D-3, page 3 of 3						
AGRICULTURAL/RURAL						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
* Additional Detail for Managed Forests The following categories can be used in lieu of the default risk ranking for Managed Forests:						
* Managed Forests - Broadcast fertilized areas (M in Zones, otherwise L)						
* Managed Forests - Clearcut harvested <30 years (VH in Zones, otherwise H)						
* Managed Forests - Partial harvested <10 years (H in Zones, otherwise M)						
* Managed Forests - Road density > 2 mi/sq. mi) (H in Zones, otherwise M)						

1. Concentrated Animal Feeding Operation: Animal Feeding Operation (requires NPDES permit) with greater than:

If pollutants discharged (directly or indirectly) to navigable waters	If pollutants not discharged
300 slaughter or feeder cattle	1,000 slaughter or feeder cattle
200 mature dairy cows	700 mature dairy cows
750 swine	2500 swine
150 horses	500 horses
3000 sheep or lambs	10,000 sheep or lambs
16,500 turkeys	55,000 turkeys
9,000 laying hens or broilers (liquid manure system)	30,000 laying hens or broilers (liquid manure system)
1500 ducks	5000 ducks
300 animal units	1000 animal units

2. Animal Feeding Operation: lot or facility where animals (other than aquatic) have been or will be stabled or confined and fed or maintained for total of 45 days or more in any 12 month period.

PCA Checklist						
Table D-4, page 1 of 3						
OTHER ACTIVITIES						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
NPDES/WDR permitted discharges (H)						
Underground Injection of Commercial/Industrial Discharges (VH)						
Historic gas stations (VH)						
Historic waste dumps/landfills (VH)						
Illegal activities/unauthorized dumping (H)						
Injection wells/ dry wells/ sumps (VH)						
Known contaminant plumes (VH)						
Military installations (VH)						
Mining operations - Historic (VH)						
Mining operations – Active (VH)						
Mining - Sand/Gravel (H)						
Wells – Oil, Gas, Geothermal (H)						
Salt Water Intrusion (H)						
Recreational area – surface water source (H)						
Snow Ski Areas (H in Zones, otherwise M)						
Recent (< 10 years) Burn Areas (H in Zones, otherwise M)						

PCA Checklist						
Table D-4, page 2 of 3						
OTHER ACTIVITIES						
	If Zones Established					
PCA (Risk Ranking)	No PCA in zones	PCA in Zone A?	PCA in Zone B?	PCA in Watershed	Unknown	Comments
Dredging (H in Zones, otherwise M)						
Underground storage tanks						
Confirmed leaking tanks (VH)						
Decommissioned - inactive tanks (L)						
Non-regulated tanks (tanks smaller than regulatory limit) (H)						
Not yet upgraded or registered tanks (H)						
Upgraded and/or registered - active tanks (L)						
Above ground storage tanks (M)						
Wells – Water supply (M)						
Construction/demolition staging areas (M)						
Contractor or government agency equipment storage yards (M)						
Transportation corridors						
Freeways/state highways (M)						
Railroads (M)						
Historic railroad right-of-ways (M)						
Road Right-of-ways (herbicide use areas) (M)						
Roads/ Streets (L)						

PCA Checklist						
Table D-4, page 3 of 3						
OTHER ACTIVITIES						
PCA (Risk Ranking)	If Zones Established			PCA in Watershed	Unknown	Comments
	No PCA in zones	PCA in Zone A?	PCA in Zone B?			
Hospitals (M)						
Storm Drain Discharge Points (M)						
Storm Water Detention Facilities (M)						
Artificial Recharge Projects						
Injection wells (potable water) (L)						
Injection wells (non-potable water) (M)						
Spreading Basins (potable water) (L)						
Spreading Basins (non-potable water) (M)						
Medical/dental offices/clinics (L)						
Veterinary offices/clinics (L)						
Surface water - streams/lakes/rivers (L)						
Other (list)						

Directions for Using the Vulnerability Ranking Spreadsheet – Surface Water

General Notes:

From the DHS website, download the “Surface Water Vulnerability Ranking Master List”. Within this document, there are two spreadsheets for surface water – one for sources with zones defined, and one for sources without zones defined (zones are optional). The list in the spreadsheets comes from the PCA checklists.

- *Surface Water Vuln Ranking master list.xls*, sheet “SW w Zones” or
- *Surface Water Vuln Ranking master list.xls*, sheet “SW no Zones”

For the list with zones, each PCA is listed four (4) times: Zone A, Zone B, Watershed (remainder), and Unknown.

For the list without zones, each PCA is listed two (2) times: Watershed and Unknown.

PCA risk points (Column C) have been assigned based on the risk of the PCA (VH, H, M, or L) for that zone.

To use the Vulnerability Ranking Spreadsheet follow these steps:

1. Conduct the PCA inventory.
2. Make a copy of the appropriate spreadsheet and give the new sheet a descriptive name.
3. On the new sheet, delete rows for any PCAs that do not exist in any of the zones. (Remember that each PCA is listed 4 times).
4. Delete rows for PCAs that don't occur in a particular zone (i.e. if the PCA exists only in Zone A, delete the rows for Zone B, Watershed and Unknown).
5. For PCAs whose existence is unknown, delete the appropriate rows (i.e. if you have no idea whether the PCA exists, keep the Unknown row and delete the others. Similarly, if you know the PCA exists in Zone A but you aren't sure about B and the remainder of the watershed, delete the rows for B and Watershed and keep the rows for Zone A and Unknown.)
6. The remaining rows should represent all of the PCAs that exist or whose location is unknown within the zones. (For some sources, especially in urban areas, this may still be a very long list.)
7. Calculate Physical Barrier Effectiveness for the source. Insert the corresponding points (i.e., H = 1, M = 3, L = 5) into column E for all the rows.
8. Determine the Vulnerability Score in Column F (sum of columns C + D + E)
9. Sort the list by the Vulnerability Score, from highest to lowest.

10. For surface water, the source is considered vulnerable to all PCAs with vulnerability score \geq
11. Shade these yellow (see the sheet "*Sebastopol*" for example).
11. Review the list. This is a good time to review the assessment with the water supplier. Items to consider:
 - a. Are there detected contaminants in the source water? What are the PCAs associated with the contaminants? Are those PCAs at the top of the list? If not, move them there with a note or asterisk.
 - b. What were the perceived biggest problems before doing the assessment? Are these PCAs at the top of the list? Should they be?
 - c. Are there PCAs at the top of the list that don't seem particularly important?
12. If there are any concerns with the vulnerability ranking, go back and review the PCA inventory. Revise the inventory as necessary.
13. Revise the vulnerability ranking as necessary.
14. Print the final list, save to disk, and submit with the remainder of the assessment.